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Signatures added, core saturation, operating frequency, IR, DWV, part marking   Replace 7351 Mylar with 300-EL type Mylar and include K102 Kapton   C   Replace 300-EL with 92-EL   10/24/96   J. Bollman   J. McCarron   RN 4-125   E   Weight limit changed per RN A-128   06/13/02   J. McCarron   J. McCarron   RN A-131   G   Notes 1 and 2 removed from Table 3.1 per   8/27/02   T. Perry   RN A-136   SHEET REVISION STATUS   SHEET REVISIO											DATE				APPROVAL						
Signatures added, core saturation, operating frequency, IR, DWV, part marking   Replace 7351 Mylar with 300-EL type Mylar and include K102 Kapton   C   Replace 300-EL with 92-EL   10/24/96   J. Bollman   J. McCarron   RN 4-125   E   Weight limit changed per RN A-128   06/13/02   J. McCarron   J. McCarron   RN A-131   G   Notes 1 and 2 removed from Table 3.1 per   8/27/02   T. Perry   RN A-136   SHEET REVISION STATUS   SHEET REVISIO		A		Tl	ne fo	llow	ing a	reas	were	chan	ged:			3	3/25/96 J. Bollman						
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Replace 7351 Mylar with 300-EL type   Mylar and include K102 Kapton   C   Replace 300-EL with 92-EL   D   Completely redrawn with revisions per   RN A-125   E   Weight limit changed per RN A-128   O6/13/02   J. McCarron   J. McCarron   J. McCarron   RN A-131   Notes 1 and 2 removed from Table 3.1 per   RN A-136   RN A-136   RN A-136   SHEET REVISION STATUS   SH				_		_	eque	ency,	IR, I	OWV	', pai	t									
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GODDARD SPACE FLIGHT CENTER GREENBELT, MARYLAND 20771

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### 1. SCOPE

- 1.1 <u>Scope</u>. The complete requirements for procuring the input filter inductor described herein shall consist of this detail specification and the issue in effect of GSFC specification S-311-320. This specification slash sheet has been written for use by the XDS project.
- 1.2 <u>Goddard Part Number</u>. The inductors shall be identified by the following part number:

S311320A-	XDS/	0009	В
(Goddard	(XDS Project	(Construction	(Class B)
Designator)	Identifier)	Code)	

### 2. APPLICABLE DOCUMENTS

2.1 <u>Applicable documents</u>: The following documents, of the issue in effect on the date of invitation for bids, form a part of this specification to the extent specified herein.

## Specifications

Federal

J-W-1177 Wire, Magnet, Electrical

NASA/GSFC

S-311-320A General Specification for Simple Custom

Electromagnetic Assemblies

**NEMA** 

MW 1000 Magnet Wire

# 3. REQUIREMENTS

- 3.1 <u>Item requirements</u>. The individual item requirements shall be as specified herein. Unless otherwise specified the general item requirements shall be in accordance with the GSFC Specification S-311-320A.
- 3.2 <u>Design and Construction</u>
- 3.2.1 <u>Outline dimensions and terminal Connections</u>. The device outline dimensions and terminal connections shall be as shown in Figure 1 and Table 1.
- 3.2.2 Weight. 22 grams, maximum

**Table 1. Device Outline** 

Table 1. Device	e Outilité
Dimension	Inches
A	0.985 (max)
В	0.375 (min)
С	0.410 (max)

**Table 2 List of Materials** 

Material	Part Number	Manufacturer	Description	Procurement Specification
#16 AWG	M1177/14-	Phelps	Modified	JW117/14B
Magnet Wire	01C016	Dodge, Rea	polyester with	(2)
			polyamideimide	
			overcoat	
Core	846T250	Phillips	Ferrite Toroid	N/A
	-3E27		Uncoated	
Cleaning	Ethanol (1)	N/A	N/A	N/A
Solvent				
Impregnating	Epon		Epoxy	
Compound	828/Versamid			
	125 (70/30)			
Insulation	92-EL	Dupont	Type A Mylar	MIL-I-15126F
Tape	or K102		or Kapton	

- (1) A procedure shall be used to limit and control the use of ethanol for cleaning cores and wires
- (2) Specification cancelled. See NEMA MW 1000 for new procurement part numbers.

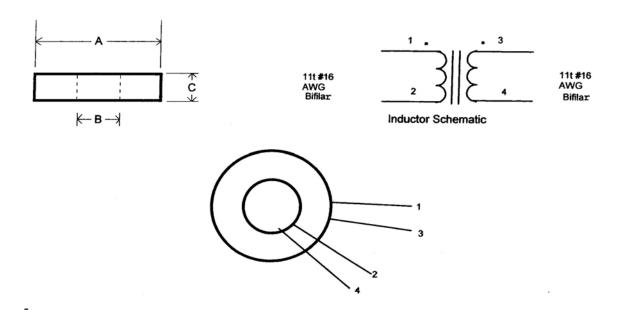


Figure 1. Input Filter Inductor

3.2.3 <u>Terminals</u>. Self lead, solderable

Length:  $5.0 \pm 1.0$  inches

3.2.4 <u>Temperature</u>.

Operating (ambient):  $-20^{\circ}\text{C to } +60^{\circ}\text{C}$ Storage  $-40^{\circ}\text{C to } +85^{\circ}\text{C}$ 

- 3.3 <u>Materials of Construction</u>. Materials shall conform to the requirements of GSFC S-311-320 specification and as specified in Table 2 herein.
- 3.4 <u>Performance Characteristics and Requirements</u>
- 3.4.1 <u>Environmental Performance Requirements</u>. The environmental performance requirements of the inductor shall be as specified in Table 3.0.

**Table 3.0 Environmental Performance Requirements** 

Attribute	Data Value	Units
Maximum Primary Winding Voltage	10	Vpp
Maximum Secondary Winding Voltage	10	Vpp
Maximum Operating Frequency	100	KHz
Maximum Current	2.5	Amps
Dielectric Withstanding Voltage (DWV)@ Atmospheric Pressure	250	Vrms
Insulation Resistance at +25°C	100	Mohms (min)
Operating Temperature Range (Ambient)	-20 to +60	°C
Storage Temperature Range	-40 to +85	°C
Temperature Rise (maximum)	+20	°C
Thermal Shock	-10 to +70	°C

3.4.2 <u>Electrical Performance Requirements</u>. The electrical performance requirements shall be as specified in Table 3.1.

 Table 3.1 Electrical Performance Requirements
 Note 1

Wire Nu	mber	DC Windin	g Resistance	Winding Ir	ductance	Turns Ratio 100		
		(mOhms)	Note 1	(µHenrys)	Note 2	mVpp sine @ 100 kHz		
Start	End	min.	max.	min.	max.			
1	2	2.6	8.0	259	390	1:1		
3	4	2.6	8.0	259	390			

Note 1 Measurements in Table 3.1 to be taken with Wayne/Kerr Model 3240 Inductance Analyzer or equivalent.

3.4.3 <u>Core Saturation</u>. The core shall be capable of carrying a minimum of 115mA dc to minimize core saturation during differential operation.

- 3.5 <u>Part marking</u>. The part shall be fully identified on the part or package as applicable. The following information is required to maintain part identification and traceability: part number (see 1.2), serial number, terminal identification and lot date code.
- 3.6 <u>Data Requirements</u>. All screening test data shall be traceable to each inductor by serial number and lot date code. All d.c. resistance, inductance and insulation resistance measurements shall be read and recorded
- 3.7 Radiographic Inspection. Applicable, reference Appendix A of S-311-320.
- 3.8 <u>Wire Stripping</u>. The use of mechanical stripping is preferred for magnet wire. If chemical stripping must be used, a procedure must be established as a minimum to control chemical overrun and the final cleanliness of the stripped wire.

### 4. PRODUCT ASSURANCE PROVISIONS

- 4.1 <u>Qualification Inspection</u>. Devices designed and manufactured in accordance with this specification shall be capable of meeting the qualification requirements of GSFC S-311-320 specification.
- 4.2 <u>Quality Conformance Inspection</u>. Quality conformance inspection shall be performed on 100% of the devices built to this specification and shall be in accordance with paragraph 4.5 of GSFC S-311-320. Lot acceptance shall be in accordance with the criteria given in paragraph 4.5.2 of S-311-320.
- 4.2.1 <u>Burn-in</u>. A twenty-four hour, non-operating bake is required. See Table IV of GSFC S-311-320.